THE

AMERICAN REVIEW OF TUBERCULOSIS ABSTRACTS

VOLUME LII AUGUST, 1945 ABST. NO. 2

Prophylaxis of Tuberculosis in School Children.—A review of the achievements in the field of school hygiene and medical supervision of teachers and school children during the past forty years is given. Much pioneer work, largely due to Doctor Martirene, has been done. Physical conditions of the pupils of many schools have been thoroughly investigated. Vacation colonies have been instituted. In 1927 systematic BCG vaccination of school children was started and has proved to be helpful. The investigation of a school takes five weeks. In the first week the children's parents are called to meetings and are given lectures about tuberculosis and the necessity for medical examination of the children, including tuberculin tests. After the parents' consent has been obtained, each pupil and teacher is skin-tested (Pirquet) and is given a complete physical examination. A special record about the anomnesis, the social and economic conditions of the family and their health status is filled out by social workers and kept on file. During the third week a modified Mantoux test (1:100 and 1:10) is given to all doubtful or negative cases and the results are read. During the fourth week all children are X-rayed with a portable X-ray machine at a rate of about 200 a day. In the fifth week, special X-ray pictures and further examinations are made for all those with dubious X-ray findings. Their families are examined, also. The private physician is advised and all children with negative skin tests and normal X-ray pictures are given BCG vaccine. This vaccination is given to the nonallergic patients of all ages, as it is considered the most effective measure against tuberculous infection. Tuberculin reaction occurred among 8,724 children between 6 and 14 years of age in 37.2 per cent. The rise of the positive skin test is very steep from the twelfth to the twentieth year of life. It is 46.6 per cent in boys and 43.3 per cent in girls in their twelfth year. In the twentieth year it is 79 per cent in men and 82.9 per cent in women. In the age group from 14 to 16 it is 67.4 per cent and in the age group from 16 to 20 it is 80.4 per cent. It has been observed that among young women the frequency and the severity of the infection is markedly higher than in young men. Of 8,724 pupils examined during the years 1940 to 1942, 3,123 had a positive skin test. Of them, 588 (18.8 per cent) were tuberculous; 204 (6.5 per cent) had suspicious X-ray pictures; 169 or (5.34 per cent) were suspected of activity or active; 24 (0.76 per cent) were frankly progressive and 191 (6.1 per cent) had residual tuberculosis. As there are 60,000 pupils in the public schools of Uruguay it may be anticipated that about 3,000 of them are tuberculous and need immediate medical attention or sanatorium treatment. Of all those with proved tuberculous lesions, 29.2 per cent had a positive tuberculin test. It has been found that between 2 per cent and 3 per cent of teachers have active lesions and at least 1 per cent have sputum positive for tubercle bacilli. Amongst the student teachers, 6.7 per cent were suspects and of those, two-thirds had tuberculosis. Each teacher who is found to have a lesion is given a three-year vacation, but in view of the precarious economic condition of the majority of the teachers, they generally cannot benefit from a sanatorium cure and are forced to accept other work during this period. —*Profilaxis de la tuberculosis en el medio escolar, L. M. Petrillo, Bol. Inst. internac. am. de protec. a la infancia, September, 1944, 18: 445.*—(*W. Swienty*)

Photoroentgen Chest Examinations.—One hundred thousand consecutive routine photoroentgen examinations of the chest of men reporting to an Induction Station were reviewed by the authors. They believe that this method, using 4 x 5 inch stereoscopic films, has made the older method obsolete. Not only is there economy in the smaller film, but the concentrated field of vision, the sharpness and definition of the image, the rapidity and accuracy with which interpretation can be made, and the minimum of eye fatigue are added factors favoring this method of examination. A Lysholm grid was used in all examinations and added to the excellence of the film quality. The rejection rate for pulmonary tuberculosis in this series was 4.91 per thousand examined, including all types of disease from far advanced active cases to the chronic minimal fibrous or apparently arrested cases in which stability of the lesions was not yet demonstrated. Among the nontuberculous conditions of the lung and pleurae, 3.55 per thousand were rejected. Abnormalities of the heart, pericardium and great vessels were found resulting in a rejection rate of 3.87 per thousand. The low rejection rate at this station reflects creditably on the antituberculosis program in North Carolina and also on the screen-out of known tuberculous selectees at the local boards. The economy and facility of accurately diagnosing pulmonary disease with this method without recourse to the more expensive 12 x 17 inch films is to be considered in view of the reported increase in tuberculosis since the onset of the war especially in Europe, and the predictions of others, including Plunkett who maintains that "tuberculosis will assume the proportions of a plague in Europe as the war progresses."—*A Statistical Analysis of 100,000 Examinations of the Chest by the Photoroentgen Method, P. Zanca & F. K. Herpel, Radiology, August, 1944, 43: 122.*—(*G. F. Mitchell*)

Survey of "Healthy" Persons.—In the dispensary of Palencia 2,004 persons, supposedly healthy, were examined. Of 704 contact cases, 97 (15.9 per cent) were found to be tuberculous; 64 of these (19.2 per cent) were children. Of another group of 1,300 people who had no known contact with tuberculosis and who were taken from different parts of the population, 38 (2.9 per cent) were found to have active tuberculosis. The Mantoux test was given to a group of 1,255 supposedly healthy persons and more than 75 per cent were positive. It is interesting to note that throughout Spain mass examinations with intracutaneous tuberculin tests proved to be positive in 51 per cent to 73 per cent of those tested, according to the different authors.—*Nuestros resultados en la investigacion sistematica en personas supuestas sanas, B. Urzay & D. Opacio, Rev. de Sanidad e Higiene Publica, March-April, 1944, 18: 147.*—(*W. Swienty*)

Tuberculosis Survey among Healthy Persons.—In several South American republics systematic physical and X-ray examinations have been conducted in a large number of communities of supposedly healthy people. A surprisingly great amount of inactive and active pulmonary tuberculosis was detected which had never been diagnosed before, although many had received medical treatment for their symptoms. In Argentina, of a group of state employees (3,872 persons) who were supposed to be healthy, 263 or 6.79 per cent were found to have positive X-ray findings. Of these, 111, or 2.86 per cent, had a frankly progressive tuberculosis. In Buenos Aires, 62,349 persons were examined. Of these, 18.9 per cent showed evidence of tuberculosis; 3.08 per cent had active tuberculosis, 15.63 per cent had residual tuberculosis. It can be concluded that 5 per cent to 10 per cent, or even more, of the entire population presents X-ray or other evidence of tuberculosis. During the review of their studies the investigators found that 25 per cent of all cases who had an apparently inactive lesion, detected only by X-ray, progressed within one year. Of these, 13.7 per cent had a severe form of tuberculosis after one year. Therefore, it is advocated that even the most discrete forms of X-ray findings should be watched closely and have an X-ray film at least every three

months. In Brazil a survey was made comprising various groups of occupations with a total number of 175,277 examined persons. Amongst those, 7,824 (4.46 per cent) showed X-ray evidence of pulmonary disease; 3,821 (2.80 per cent) of the total number examined had active tuberculosis. In Uruguay, 5.62 per cent of 14,200 examined presented active tuberculosis. In Chile, 44,612 health examinations were made and 4 per cent were found to have active tuberculosis. The impression is that the primary complex in the majority of cases heals spontaneously. The same is probably true for the reinfection. It is necessary to decentralize the health service and to bring the facilities of X-ray and sputum examinations to the people, even in the smallest communities. Only in this way will it be possible to detect the tuberculous cases that are dangerous to healthy communities. In Rio de Janerio at least 2 per cent of the population have active pulmonary tuberculosis with positive sputum. Those should be detected and sent to a sanatorium for further treatment. It is suggested that communities be built where tuberculous patients who are strong enough would have the opportunity to work and to lead a normal social life without danger of spreading the disease among healthy people. Only the very sick patients should be admitted to sanatoria or to hospitals. In the large cities only diagnostic and follow-up centres should be established, whereas the patients should be treated in rural regions.—*La pesquisa de la tuberculosis en las colectividades supuestas sanas, M. de Abreu, Prensa méd. argent., November 15, 1944, 31: 2311.*—(*W. Swienty*)

Roentgenograms in Dispensary.—The authors studied a series of 6,700 chest X-ray films taken by the Dispensary of Nueva Pompeya; 1,074 showed evidence of pulmonary tuberculosis. Out of these, 108 (1.61 per cent) were primary infections and 976 (14.56 per cent) were reinfections. Among them were 80 (1.19 per cent) minimal, 311 (4.64 per cent) moderately advanced, and 286 (4.26 per cent) far advanced cases with sputum positive for tubercle bacilli. The far greater part of the newly discovered cases presented moderately or far advanced tuberculosis. There were a number of cases with non-tuberculous lesions: 6 had abscess, 35 bronchiectasis, 7 emphysema, 3 hydatid cyst, 18 cancer, 8 supernumerary ribs, 10 deformities of the diaphragm, 4 diaphragmatic hernias without pneumothorax, 7 azigos lobes. Out of the 705 active cases, a pneumothorax was induced in 90 (12.8 per cent). From this number, 21 (23.3 per cent) developed fluid. It must be taken into consideration that most of these patients were ambulatory patients. The authors point out the fact that a great number of children acquire the primary infection only in the later years of adolescence. Ambulatory pneumothorax can only be given to patients in good general condition. The authors do not give any pneumothorax to patients when the disease is in progress, but wait until the acute phase is past.—*La radiografia de torax en el medio dispensarial antituberculoso, J. L. Bondi, R. Scartascina & F. A. Lamolla, Prensa méd. argent., September 13, 1944 31: 1826.*—(*W. Swienty*)

Routine Chest Roentgenography.—During a thirty-one-month period, 102,241 Negro inductees were examined. Of these, 0.83 per cent were rejected because of disqualifying tuberculous lesions, while 1.27 per cent were deferred because of the presence of small, fibrotic infiltrations. Disqualifying lung diseases other than tuberculosis were found in 0.45 per cent; the great majority of these had asymptomatic pneumonia. Miscellaneous conditions of the thoracic cage, mediastinum, pleura, diaphragm and dorsal spine were the causes for rejection in 0.28 per cent, while 0.41 per cent had abnormalities of the heart and great vessels. The comparatively low incidence of rejectable tuberculosis and high percentage of pneumonia are stressed. Ninety-four per cent of all cases were examined by means of the Army photoroentgen unit. This method, which employs 4 by 5 inch stereoscopic films, proved speedy and entirely satisfactory; supplemental films were

necessary in only 1 per cent of the cases. —*Routine Chest Roentgenography on Negro Inductees at Fort Benning, Georgia, E. R. Bowie & H. G. Jacobson, Am. J. Roentgenol., November, 1944, 52: 500.*—(*P. Lowy*)

Battle Injuries of Chest.—Eight cases have been selected from a large number of chest injuries recently seen. These are presented to illustrate the variety and type of pathological conditions of the chest seen in battle casualties. Two cases, one of pulmonary fat embolism and one of mediastinal emphysema, were included although there were complications of injury elsewhere. Because of the frequency of transdiaphragmatic wounds, it is preferable to examine the patient with a chest injury in upright position. If this is impossible the patient should be examined with a postero-anterior projection in the lateral recumbent position in order to detect subphrenic air. Examinations of the chest, using the portable unit and routine chest technique, are often unsatisfactory because the foreign bodies are difficult to see beneath the diaphragm or behind the heart. For this reason overpenetrated roentgenograms have often been used. Roentgenoscopy has given valuable information in many instances. The hemopneumothorax which accompanies chest injuries becomes encapsulated early due to the large amount of fibrin present. In several cases this encapsulation took place in the paramediastinal pleura and made the differential diagnosis between mediastinal pleural effusion and pericardial effusion difficult. Although some of the foreign bodies have been large and carried in bits of clothing, and although some of the injuries have been severe, no roentgen evidence of infectious processes such as empyema, lung abscess or mediastinitis has been seen. This is attributed to the early use of penicillin and chemotherapy. (Authors' Summary)—*Roentgen Pathology of the Chest in Battle Casualties, D. S. Carroll & P. Ciaglia, Am. J. Roentgenol., January, 1945, 53: 1.*—(*P. Lowy*)

Tuberculin Tests in Children.—In 9 per cent of the children admitted to the sanatorium the skin test was negative. In 14 out of 63 cases in which the first skin test had been negative, the second skin test turned positive. In the remaining 49 cases the allergy developed more slowly. Thirty-one children developed a positive test later. The disappearance of a previously positive skin test occurs seldom, in about 2 to 4 per cent of the cases and it stands for a bacteriological healing of the infectious focus. It is well known that allergy does not develop immediately after the entry of the bacilli into the organism, but the conception that the allergy is completed when the skin test turns positive is not always true.—*De quelques variations des réactions à la tuberculine chez l'enfant de 5 à 15 ans, Bergeron, André, Bucquoy & Beust, Rev. de la tuberc., 1941, 6: 493.*—(*G. Simmons*)

Vaccination with Heat-killed Tubercle Bacilli.—Individuals in Kingston and in the rural communities of Jamaica, B.W.I., were tested with Old Tuberculin. The persons who failed to react or those who reacted only to 1 mg. of tuberculin were divided into two groups. One received a single intracutaneous injection of heat-killed tubercle bacilli. The other was left as control. About 8,000 individuals were present in each group. At the end of about 21 months between 70 and 80 per cent of both groups were examined fluoroscopically and by films for tuberculosis. Five cases of manifest tuberculosis were found in the vaccinated group and 10 in the controls. This difference, however, is not statistically significant. The authors feel that since the incidence of tuberculosis in the general population, negative or weakly positive to tuberculin, is low, the period of observation, 21 months, is too short to determine the protective value of vaccination. Furthermore, since 25 per cent of each group were not reached for observation no definite conclusions could be drawn from the findings.—*Results Obtained with Heat-killed Tubercle Bacilli Administered to Persons in a General Population, C. W. Wells & E. W.*

Flahiff, Am. J. Hyg., September, 1944, 40: 109.—(M. B. Lurie)

Vaccination with Heat-killed Tubercle Bacilli.—The annual population of the Kingston Mental Hospital in Jamaica was approximately 2,500 over the past 10 years with 540 new admissions each year. Within the first 2 weeks after admission the patients were tested with tuberculin. Those not reacting to 1.0 mg. of Old Tuberculin were alternately vaccinated with heat-killed tubercle bacilli or left as controls. During the last 4 years of the 10 year period of observation the vaccine was also given to alternate patients who failed to react to 0.01 mg. of tuberculin. The vaccine was at first administered in multiple intracutaneous doses over a period of several weeks. In the latter portion of the study 0.2 to 0.3 mg. of the vaccine was given in each of two sites on a single occasion. The mortality from tuberculosis was about 65 annually. This indicates the intensity of the contagion prevalent in this institution. The tuberculosis attack and death rates were significantly lower, about one-half, among the vaccinated than among the controls, especially during the first 2 years of observation. Since the persons who received the heat-killed bacilli were not isolated from contagion following treatment it is likely that many acquired tuberculosis before adequate protection could develop from the effects of the vaccine. Nevertheless the vaccine afforded some protection under these unfavorable circumstances. The tuberculosis attack and mortality rates among persons strongly positive to tuberculin on admission were consistently and significantly lower than among persons who were weak or negative reactors to tuberculin on admission. The authors recommend the use of heat-killed vaccine as a protection for persons who may be subjected to unusual risk of tuberculous infection, for example, medical students, pupil nurses etc.—*Results Obtained in Man with the Use of a Vaccine of Heat-killed Tubercle Bacilli, C. W. Wells, E. W. Flahiff & H. H. Smith, Am. J. Hyg., September, 1944, 40: 116.—(M. B. Lurie)*

Tuberculosis and Respiratory System.—The authors give a summary of the most important papers published during the preceding year. Several publications stress the numerical rise and the increase in the gravity of tuberculosis in all age groups. Whereas the morbidity had decreased about 50 per cent during the last twenty years, it now shows a rise of 20 to 30 per cent. Positive sputum findings in 1941 increased 290 per cent over the preceding year. Tuberculosis of the bones, too, is more frequently encountered. These observations are compared with those made during the first World War and are linked to malnutrition, lack in vitamins and physical and mental exhaustion. Several papers confirm the conception that patients with Basedow's disease offer a certain resistance to tuberculosis. Tuberculosis of the bones is most frequently encountered in the age group 2 to 6. This age corresponds to the period of an increase of the blood-flow to the bones and the transformation of cartilage into osseous tissue. These conditions facilitate deposition of bacilli in the bones, whereas the participation of the lungs is rare at this age. Pleurisy has a great importance for the subsequent development of osseous tuberculosis. In the tuberculosis of the cervical lymph nodes a fistula usually develops. In adolescents the participation of the lymph nodes in the primary infection is more pronounced than in adults. This fact is linked with anthracosis of the lymph nodes which limits the passage of bacilli. A hypertrophic form of hilar lymph node tuberculosis, resembling Hodgkin's disease, is described. Several papers deal with the importance of the blood picture for the prognosis of pulmonary tuberculosis, the importance of the sedimentation rate and of toxic granulations. Indications, technique and results obtained with Monaldi's intracavitary aspiration are described in several papers. Dumarest treated 50 cases and obtained a cure in 5. The most

important problem still remains the occlusion of the bronchus. Pneumoperitoneum is still used, in addition to a phrenic paralysis, as a substitute for a phrenic paralysis and in pulmonary hemorrhages, where the institution of a pneumothorax was not successful. The importance of vitamins in tuberculosis is dealt with in several papers, and vitamin C seems to be the most important of all. Cylindromata of the respiratory system are described in detail, the diagnosis is difficult, the clinical manifestations not being pathognomonic. In advanced cases there is extensive atelectasis. Visualization of the bronchus is essential for the diagnosis. These tumors are described as benign. In several other papers angiomata and neurinomata are described. In the therapy of asthma importance is being given to gold therapy, desensitization with tuberculin, insulin-shock therapy, prolan therapy (success in 50 per cent of cases treated) and surgical procedures.—*La tuberculose et les voies respiratoires en 1942, P. M. Bariéty, J. Lereboullet & R. Gravois, Paris méd., 1942, 1: 57.*—(*G. Simmons*)

Posthemoptoic Pulmonary Lesions.—On the basis of experimental work done on rabbits and microscopic studies of human autoptic material the following theory concerning the pathogenesis of tuberculous lesions originating after an hemoptysis is advanced: The blood is aspirated in territories containing miliary tubercles, silent as far as the clinical and the radiological picture is concerned, and causes a perifocal reaction around these tubercles. It is this perifocal reaction which appears subsequently in X-ray films as spread of the disease.—*Sulla patogenesi delle lesioni postemoftoiche polmonari, V. Maccone & N. Belli, Ann. Ist. Carlo Forlanini, 1943, 7: 64.*—(*G. Simmons*)

Vitamin K in Hemoptysis.—The prothrombin level was determined in 86 cases of chronic pulmonary tuberculosis. A hypoprothrombinemia, probably due to impaired intestinal absorption of vitamin K and toxic impairment of the liver functions, was found in 27 per cent of the cases. In 10 out of 15 cases who had had hemoptysis the prothrombin was decreased. Thirty-five patients with actual hemoptysis were treated with vitamin K and in 14 a noticeable therapeutic result was observed in as far as the coagulation time was shortened and the bleeding ceased at the same time.—*Erfahrungen mit K-Vitamin bei Blutspeien, K. F. Blom, Svenska läk.-tidning., 1942, p. 639.*—(*G. Simmons*)

Diagnosis of Apical Tuberculosis.—The evaluation of an apical tuberculosis and its activity by means of conventional X-ray films is sometimes difficult, particularly when the sputum examination and the sedimentation rate are not contributory. Tomograms are valuable in these cases because they may reveal the presence of cavities and of inflammatory changes in the bronchi which appear thickened and irregular. Two cases of apical cavities are reported, which did not appear on conventional X-ray films.—*Beitrag zur Aktivitaetsdiagnose der Lungenspitzentuberkulose, A. Beckmann, Deutsches Tuberk.-Bl., 1942, 16: 194.*—(*G. Simmons*)

Adrenal Cortex and Pulmonary Tuberculosis.—On the basis of personal observation it is stated that in a great number of cases of pulmonary tuberculosis there is a coexisting hypofunction of the adrenal cortex. There is no correlation between the gravity of the pulmonary condition and the degree of adrenal dysfunction; on the contrary, insufficiency is often encountered in the initial stages of pulmonary tuberculosis, and it seems that the function of the adrenal cortex not infrequently influences considerably the course of the pulmonary tuberculosis.—*La funzionalità corticsurrenale nella tubercolosis polmonare, B. Nolli & M. Pallazoli, Riv. di pat. e clin. d. tuberc., 1942, 16: 235.*—(*G. Simmons*)

Miliary Calcifications.—Although most authors regard tuberculosis as the cause of miliary calcifications, various other etiologic agents (Aspergillus, Ascaris, oversaturation of the blood by calcium salts) have also been

suspected. The number of pathological examinations is small. The author describes the findings in 2 patients who died of causes not related to their pulmonary condition. In both cases many calcific foci were present in the lungs, together with extensive calcification in the hilar lymph nodes. The lesions were 1 to 3 mm. in diameter, yellowish white and stony hard. Careful bacteriological examination failed to reveal the presence of tubercle bacilli, fungi or any other organism. Histologically, all lesions appeared completely healed; there was central caseation and calcification, surrounded by a fibrous capsule which, in the majority of the nodules examined, showed ossification. Occasionally a few epithelioid cells, lymphocytes and plasma cells were seen. Although miliary calcifications have been reproduced in animals by the inhalation of dry mycelial spores of *Coccidioides immitis*, because of the resemblance of the lesions to Ghon tubercles and the presence of hilar lymph node involvement the author believes the condition to be healed miliary tuberculosis of the primary type. The negative tuberculin tests *in vivo* and the absence of tubercle bacilli at postmortem examination do not disprove the diagnosis of tuberculosis.—*Miliary Calcification of the Lung, E. F. Geever, Am. J. Roentgenol., June, 1943, 49: 777.—(P. Lowy)*

Chronic Miliary Tuberculosis.—In 1924 Burnand and Bagé described a clinical entity characterized by the roentgenographic picture of miliary tuberculosis but with a paucity of symptoms and physical findings. The disease presents a striking contrast to the usual, acute, febrile, rapidly fatal course of miliary tuberculosis. One case is reported. The patient was a 41 year old married male whose family and past history were noncontributory. The present illness began one year before his admission to the hospital with diffuse abdominal pain occasionally severe. Two months after onset an appendectomy was done. The appendix was grossly normal but no microscopic examination was made. The roentgenogram of the chest was negative. Seven months after onset a rectal fistula appeared. On admission to the hospital, because of abdominal discomfort, the patient looked well. Examination revealed a few râles at the left apex, abdominal distention without ascites and an anal fistula. The chest X-ray film showed miliary nodulations throughout both lungs. Examination of the fasting gastric contents revealed many tubercle bacilli. After three days the patient left the hospital against advice and returned to work. He remained more or less well with recurrent digestive complaints due presumably to disseminated tuberculous lesions.—*Granulia friá, H. E. Osacar, Rev. méd. d. Hosp. Ital. d. La Plata, June, 1944, 1: 51.—(R. Kegel)*

Treatment of Tuberculosis.—In initial forms of pulmonary tuberculosis and in those cases which progress favorably, the lipase content of the blood is increased, whereas it decreases as the disease becomes advanced. Since the lipolytic enzyme is bound to a protein containing ascorbic acid, it is possible to increase the lipase content of the blood by introduction of vitamin C into the blood. When the lipase values are low, the vitamin C level is low too. Vitamin C deficiency in pulmonary tuberculosis may occur because vitamin C is stored in epithelioid cells, histiocytes etc. and because of the desquamation and elimination into the alveoles of other cells filled with vitamin C.—*Probleme der Tuberkulosetherapie, B. Scholz, Beitr. z. Klin. d. Tuberk., 1942, 97: 620.—(G. Simmons)*

Diet in Pulmonary Tuberculosis.—The necessity for adapting the patient's diet to his instinctive desires and his condition is stressed. It was observed that patients with exudative pleurisy prefer vegetables and fruit, whereas there is a preference for meat during the process of healing of the underlying tuberculous condition. Good results are reported with the Gerson, Herrmansdorfer and Sauerbruch diet to which calcium, vitamin A, C and D had been added. Meat was given according to the desire of the patient and periodically the diet consisted for a day of

vegetables and fruit only. If this diet remains unsuccessful, the cause is seen in a "general tissural toxicosis" and the tissues must be detoxicated. This is obtained by fasting. This dietetic treatment, however, is only part of a general therapeutic scheme. Nine cases are reported.—*Beitrag zur diaetetischen Therapie der Lungentuberkulose, Oefelein, Hippokrates, 1942, p. 299.*—(*G. Simmons*)

Diasone in Pulmonary Tuberculosis.—Thirty patients with pulmonary tuberculosis were treated with diasone (disodium formaldehyde sulfoxylate diaminodiphenylsulfone). The disease was bilateral in 29 patients, unilateral in one; it was minimal in one patient, moderately advanced in 14, far advanced in 15. All patients had active disease. Sputa or gastrics of all patients were positive for tubercle bacilli. One gram of diasone was given daily in three doses in most patients through 120 days. Cyanosis developed in 90 per cent of the cases. Other signs of toxicity were: headache, nausea, anorexia, nervousness, tremor, dizziness, vomiting. In most patients a transient anemia of moderate degree was seen. The sedimentation rate showed usually some improvement. In no case was a conversion of the sputum or gastric obtained. Chest X-ray examinations showed: diminution of exudative infiltrations in 6 cases, decrease of cavity size in 2 cases, new cavities in one case, enlargement of cavities and new infiltrations in 6 cases, no change in 15 cases. It is believed that diasone had no beneficial effect in these 30 cases.—*La diasone dans la tuberculose pulmonaire, R. Desmeules, L. Rousseau, M. Giroux & P. Richard, Laval méd., December, 1944, 9: 780.*—(*G. C. Leiner*)

Epituberculosis.—In 17 cases of fatal childhood tuberculosis the autopsy revealed pulmonary atelectasis. During life 13 children had shown the classical signs of epituberculosis. Atelectasis of the entire right upper lobe was found in one case, in 4 cases of parts of the right upper lobe, in 3 of the entire right middle lobe, in 4 of parts of the middle lobe, in one of the right lower lobe, in one of parts of the left upper lobe and in three of the left lower lobe. In many cases a narrowing of the lumen of the regional bronchus was found and in all cases there were adhesions between the lymphatics and the bronchi corresponding to the atelectatic area. In 9 cases the primary focus was found in the atelectatic portion of the involved lobe, in 4 cases the primary focus was in another lobe and in 2 cases no primary focus was found. The findings seem to confirm the predominant concept that pulmonary atelectasis is the underlying anatomical lesion of epituberculosis. Atelectasis is the result of an extrinsic pressure on the regional bronchial system from peribronchial lymphatics. The lymph nodes in many cause compression and narrowing of the bronchial lumen. In a few cases imspissated caseous material resulting from perforated lymph nodes causes obstruction while in the majority of the cases adhesions between the lymph nodes and the bronchial wall seem to be sufficient to interfere with bronchial movements. This causes inflammatory and circulatory changes in the bronchial wall such as edema and congestion. Chronic atelectasis leads to collapse induration with subsequent bronchiectasis.—*Comprobacion anatomopatologica en la epituberculosis infantil, G. Llodra & A. Guzman, Arch. d. Hosp. niños Roberto del Rio, Santiago, Chile, December, 1943, 11: 149.*—(*F. G. Kautz*)

Epituberculosis.—The classical concept of Eliasberg's and Neuland's "epituberculosis," that is, pulmonary toxic infiltrations developing around a tuberculous focus, has been revised in recent years. The findings of Roessle in particular have demonstrated that pulmonary infiltrations of a favorable clinical course, which were classed as epituberculosis, really corresponded to atelectasis. Two hundred and forty-nine cases of this type were studied, these cases having been selected from 3,418 observations. Radiological lesions were found more often in the right upper lobe. In cases of extensive atelectasis all the known symptoms of retraction were found; in the cases of partial atelectasis, homogeneous

shadows of variable distribution were found, at times having the aspect of Sluka's triangle. Symptoms of tracheobronchial lymph node enlargement were sometimes recorded in the clinical study. Bronchoscopy could be done in 16 cases, in which tracheal and bronchial tuberculosis was found, generally of the type of congestion and edema of the mucosa, in 15 cases. The rôle of intrabronchial secretion in the production of atelectasis was demonstrated by the improvement of the radiological shadows after inspiration had been performed during bronchoscopy. In the 4 cases where autopsy was performed, tuberculosis of the tracheobronchial lymph nodes was seen, with compression of the corresponding bronchi; in all of these cases there were pathological changes in the bronchial wall itself, from edema and congestion to ulceration by lymph node bronchial perforation. The atelectasis in these cases was chronic, with phenomena of organization. The frequence of emphysema in the immediate regions of atelectasis was seen, especially on the edges of the lung.—*Estudio anatomo-clinico de las infiltraciones pulmonares benignas en la infancia, J. Peña, E. Peña & L. Capdeville, Ap. respir. y tuberc. (Chile), July–September, 1944, 9: 190.*—(*H. Behm*)

Prognosis after Pneumonectomy.—Follow-up of 25 successful pneumonectomy cases shows that the majority of patients were able to return to work. The most frequent symptom complained of was dyspnea. This was slight in 7 cases, and moderate in 2. The operations were all done for bronchiectasis or chronic suppurative diseases. It can be expected that dyspnea will be a less frequent occurrence after pneumonectomies for malignant disease because the rest of the lung can be expected to be free from abnormal conditions. The length of hospitalization and the length of invalidism before work can be started are largely determined by the absence or presence of bronchial fistula. Where no fistula developed, the average hospitalization was eleven weeks. With fistula, this was seventeen weeks. The development of fistula did not bear any relation to the presence of dyspnea. The eventual outcome was equally good in cases with fistula as without. Development of dyspnea was more nearly related to the patient's age than to any other factor. Its incidence increased with increasing age.—*Prognosis after Successful Pneumonectomy, J. M. Cheale & F. H. Young, Lancet, December 16, 1944, 247: 784.*—(*H. Marcus*)

Lung Abscess and Tuberculosis.—The coexistence of tuberculosis and a lung abscess is not as unusual as is generally believed. Five cases of putrid abscess superimposed on the course of a chronic cavitary pulmonary tuberculosis are reported. This complication affected the clinical course, death resulting in 4 cases. Autopsy showed the existence of a superimposed acute inflammation on the wall tuberculous cavities in 2 cases. Three cases of pulmonary abscess were also found in which tubercle bacilli were occasionally found in smears of the sputum. In spite of this finding the abscess continued its normal course and clinical tuberculosis was not found during the period of observation. These cases have been explained by assuming that the abscess destroys an old tuberculous focus, freeing tubercle bacilli and eliminating them through expectoration.—*Supuraciones pulmonares en tuberculosos, E. P. Aznarez, An. d. tisiol. y climatol., 1943, 2: 3.*—(*H. Behm*)

Diabetes and Tuberculosis.—Twenty-nine cases of diabetes with tuberculosis have been studied. Ninety-four per cent of the cases occurred between the ages of 30 to 60 years. Most of the lesions were located in the perihilar region, 13 of which were of a mixed type, 3 of the fibrotic and 10 of the exudative type. There were 3 caseous pneumonias and in 70 per cent cavitation was present. All cases were already in an advanced stage when admitted to the sanatorium. Hemoptysis, pleural effusion and laryngeal involvement were more frequent and the prognosis was definitely worse than amongst the nondiabetics with similar tuberculous lesions. The death rate was 20 per cent in the combined disease group

as compared to 10 per cent among the nondiabetics. There were 2 deaths directly due to hemoptysis and both occurred among the diabetics. The antidiabetic treatment consisted of a standardized diet of about 2,500 calories with a generous allowance of protein and high carbohydrates in addition to insulin which was given up to one hundred units per day without any apparent ill-effect. Insulin was not given while the patient was bleeding. The antituberculous treatment consisted of collapse therapy, gold injections and sanatorium care. Improvement occurred in the diabetics in 44 per cent as against 58 per cent in the nondiabetics.—*Diabetes and Tuberculosis, M. P. Sinha, Patna J. Med., January, 1944, 19: 1.*—(*F. G. Kautz*)

Diabetes and Tuberculosis.—An analysis of the reports of ten American clinicians based on the observations of 17,358 cases of diabetes indicates a higher incidence of tuberculosis in diabetic persons than in the general population of the United States. The increased susceptibility of diabetic patients to tuberculosis is probably due to several causes, of which vitamin-A deficiency is considered the most important. The number of patients with diabetes and pulmonary tuberculosis treated in specialized institutions is far below the estimated number of tuberculous diabetic persons. The conception that asymptomatic tuberculosis is a characteristic complication of diabetes is untenable; this type of pulmonary tuberculosis has often been found in roentgen ray surveys of nondiabetic patients. For the recognition of early tuberculosis, all diabetic patients should be tested with tuberculin and the test should be repeated periodically on all patients with negative reactions to tuberculin. A roentgenogram of the chest should be taken for all patients with positive reactions at least once a year. Adequate search for tubercle bacilli should be carried out when sputum is available or when roentgenologic observations justify repeated aspirations of the fasting gastric contents. Of the 125 diabetic patients admitted to Muirdale Sanatorium between January 1, 1923 and December 31, 1943, only 3 (2.4 per cent) had minimal and 104 (83.2 per cent) had far advanced pulmonary tuberculosis. Spontaneous pneumothorax occurred in 8 patients (6.4 per cent). The results in diabetic patients who, under a well planned diet and adequate amounts of insulin, showed slight glycosuria and hyperglycemia not exceeding 200 mg. per cent compare favorably with those in tuberculous patients whose blood sugar was maintained on a normal level. The administration of massive doses of vitamin A is advised. Indications and contraindications for collapse therapy are the same for diabetic as for nondiabetic patients. One hundred and fifteen diabetic tuberculous patients were discharged from the sanatorium during the observation period. Of the persons with moderately advanced pulmonary tuberculosis, 47 per cent were classified as having the disease apparently arrested, quiescent or improved, and 53 per cent were unimproved or had died. Of the far advanced group 14.5 per cent were apparently arrested, quiescent or improved, while 85.5 per cent remained unimproved or died. These therapeutic results are less favorable than those recorded for nondiabetic patients with moderately advanced and far advanced pulmonary tuberculosis.—*Diabetes and Tuberculosis, A. L. Banyai & A. V. Cadden, Arch. Int. Med., December, 1944, 74:* 445.—(*G. C. Leiner*)

Jaundice and Tuberculosis.—On the basis of 16 cases reported in this paper the author arrives at the conclusion that catarrhal jaundice always influences tuberculosis unfavorably.—*Katarrhalische Gelbsucht und Lungentuberkulose, F. Pongor, Beitr. z. Klin. d. Tuberk., 1942, 97: 603.*—(*G. Simmons*)

Fatty Liver in Tuberculosis.—Three case reports are presented of patients with pulmonary tuberculosis who showed an enlarged, painless liver of boggy consistency with smooth, rounded edges. The prominent symptoms were anorexia and weakness. At autopsy fatty infiltration of the liver was found. Autopsy material was studied from 581 tuberculous patients. Fatty infiltration

of the liver was present in 244 cases (41.9 per cent). Amyloidosis was present in 37 cases (6.3 per cent). Three hundred and ten cases (53.3 per cent) had intestinal tuberculosis. Extensive fatty infiltration of the liver was often associated with extensive tuberculous enteritis. Fatty liver was found frequently in patients with tuberculous enteritis, when the accompanying pulmonary disease was exudative or "mixed" (exudative and proliferative). Patients with fatty liver usually showed extreme emaciation.—*Incidence of Fatty Liver in Tuberculosis with Special Reference to Tuberculous Enteritis, Julia M. Jones & W. M. Peck, Arch. Int. Med., November, 1944, 74: 371.*—(*G. C. Leiner*)

Hydatid Cyst and Tuberculosis.—The coexistence of hydatid cyst and pulmonary tuberculosis is relatively infrequent. About 3 per cent of the cases of pulmonary echinococcus disease are complicated by pulmonary tuberculosis. The author presents one case in which tuberculosis was found as complication after operation for ecchinococcus cyst of the lung. The diagnosis of hydatid cyst was made by a positive Cassoni test and X-ray findings. The cyst was removed by thoracotomy and the patient was discharged with a small hydropneumothorax on the operated side. He reëntered shortly afterwards with tension pneumothorax, cough and fever. His sputum was free of acid-fast bacilli, but in the exudate many tubercle bacilli were found. The patient died of miliary tuberculosis. A tuberculous infection prior to the operation evidently caused the spread. There are four possibilities of coexistence of hydatid cyst and tuberculosis: (*1*) tuberculosis of the lung and ecchinococcus disease in other parts of the body; (*2*) pulmonary tuberculosis and hydatid cyst of the lung; (*3*) ecchinococcus disease of the lung cured either by surgery or by spontaneous emesis which later presents an active tuberculous lesion in the scar or in the residual cavity; (*4*) sudden outbreak of acute tuberculosis, probably of the miliary type, after operation for hydatid cyst.—*Hidatidosis y tuberculosis pulmonar, C. I. Rivas, Rev. Asoc. méd. argent., May 30, 1944, 58: 331.*—(*W. Swienty*)

Amebiasis and Tuberculosis.—Pulmonary tuberculosis results, beside other factors, from a lowering of the systemic resistance. This resistance in turn depends much on the power of digestion and of the assimilation and absorption of food material from the intestinal tract. The author reports 3 cases, one of unilateral and 2 of bilateral pulmonary tuberculosis associated with chronic intestinal amebiasis. All 3 cases were hospitalized but in spite of an adequate antituberculous treatment they showed poor appetite and failed to gain weight and to respond favorably to the treatment. Only after the discovery and cure of the associated amebiasis, appetite, digestion and assimilation were definitely improved. And after reaching this stage the patients recovered in due time. The author emphasizes the great importance of ascertaining and treating the cause of failure of food assimilation and thus of ensuring a turn to recovery.—*Certain Aspects in the Treatment of Pulmonary Tuberculosis, D. R. Dhar, Indian M. Rec., May, 1944, 69: 5.*—(*F. G. Kautz*)

Miliary Tuberculosis and Chronic Colitis.—A 23 year old female patient had symptoms of ulcerative colitis for about one year. Ileostomy was performed eight months later, but she did not improve. She developed chest pain and a small amount of sputum which was negative for tubercle bacilli. She had persistent hemorrhages by rectum and severe abdominal pain. X-ray films of the chest showed consolidation of most of the right lung, with cavity, and miliary disease throughout the remainder of the lungs. There was splenic enlargement, evidence of liver damage and clubbed fingers. She also had rheumatic heart disease. Autopsy showed pulmonary tuberculosis and miliary tuberculosis of all organs, together with tuberculous peritonitis without ascites. She had chronic ulcerative colitis which was typical and apparently unrelated to the tuberculous process.—*Case Record of the Massachusetts General Hospital,*

Case 30522, New England J. Med., December 28, 1944, 231: 890.—(H. Marcus)

Subclavio-Phrenic Nerve.—This is a rare anatomical condition and found in only 1 per cent of all autopsies, but it is of great importance if a phrenicoexeresis results in failure to collapse the diaphragm. In this case, the substitution of the phrenic by the subclavian nerve has to be suspected. Four cases are described. In the first one, the subclavian nerve took over the rôle of the phrenic with all its branches. It received only a small filament from the fourth cervical segment. In 2 other cases there was no phrenic nerve at all and in the last case the phrenic and the subclavian nerves ran parallel and had an equal distribution of their branches.—*El nervio subclavio-frenico, A. P. Belou & C. Capdevila, Rev. Asoc. méd. argent., September 30, 1944, 58: 825.—(W. Swienty)*

Respiratory Function in Pneumothorax.—The respiratory function was studied in 29 cases of monolateral and 12 cases of bilateral pneumothorax. Spirometric studies were made first with atmospheric air, then with pure oxygen; after one minute of exercise and again after ten minutes' rest following the exercise, the spirometric readings were repeated. The respiratory rate, the tidal air, the minute volume and the oxygen consumption per minute were recorded; furthermore the rate of the oxygen debt was calculated. The relative oxygen debt rate was obtained by comparing the oxygen consumption at rest and after exercise. Finally the maximum ventilation per minute was determined by making the patient breathe as deeply and as frequently as possible for about ninety seconds. The difference between the minute volume and the maximum ventilation per minute is considered the respiratory reserve. Respiratory insufficiency was diagnosed when the relative oxygen debt was above 25 per cent. Adopting this criterion, respiratory insufficiency was diagnosed in 18 cases out of 29 cases of unilateral pneumothorax (62.06 per cent) and in 6 cases out of 12 cases of bilateral pneumothorax (50 per cent). There was no definite evidence of a direct causal relationship between the extent and the type of lesions, the type and the degree of collapse and the respiratory insufficiency. It was noteworthy that the minute volume, ten minutes after exertion, remained above 1,000 cc. more often in cases with respiratory insufficiency than in those without respiratory insufficiency. The higher percentage of respiratory insufficiency in cases with unilateral pneumothorax may be due to the major performance of work.—*Estudio de la funcion respiratoria en los tuberculosos pulmonares tratados por el neumotorax artificial, J. B. Rocca, Temas Tisiol, Cordoba, September, 1943, 176: 189.—(L. Molnar)*

Atelectasis in Pneumothorax.—Reference is made to a previous paper dealing with the same subject. The cortical atelectasis in the course of pneumothorax treatment seems to occur more often and more readily at high altitudes, as for instance in the town of Potosi, 4,000 meters above sea level. An attempt is made to explain this phenomenon. The processes regulating the pressures, and the diffusion in the gaseous exchanges in general, are also contributing in the mechanism of atelectasis. With the diminution of the atmospheric pressure in high altitudes, the gaseous exchanges are reduced and so is the oxygen dissolved in the blood plasma. In the case of miners, there is also hypoventilation in the mines; the inhalation of dust also impairs the hematosis. The increased oxygen requirement under these conditions may also produce a loss of intraälveolar oxygen. The increase in weight of silicotic lungs may also be an important factor. All the above mentioned factors may play their rôle also at sea level, but their influence is greater at high altitude. Certain histological features of the cortical areas of the lungs, such as reduced thickness of the lung tissue, the easy obstruction of the terminal bronchioli, predispose these areas for the production of atelectasis.—*Estudios de prosecucion de las atelectasias de los bordes pulmonares, en el curso del neumotorax*

terapeutico, llevados a cabo en la Ciudad de Potosi, R. A. Subieta, Ap. respir. y tuberc. (La Paz), No. 15–16, 1943, 86: 90.—(L. Molnar)

Intrapleural Pneumonolysis in Children.—The authors started to perform the operation of Jacobaeus in children in 1938. The indications were at first strictly limited to cases with open cavity and positive sputum. Later all cases were included showing adhesions on X-ray films even without evidence of cavitation. The operation of Jacobaeus was performed in 113 cases: 48 boys and 65 girls; 13 cases from 9 to 12 years, 45 cases from 13 to 15 years, 55 cases from 16 to 18 years. No narcotics were given preoperatively. It was noted that children behaved much more quietly on the operating table than adults. The authors are in favor of early pneumonolysis (five to six weeks after induction of pneumothorax). Of 84 pneumonolyses, 49 were complete and 35 partial. Of the 49 patients who underwent complete pneumonolysis, open cavity had been present in 29 cases, positive sputum in 24 cases. After pneumonolysis the cavity disappeared in 20 cases (69 per cent); it was markedly diminished in 5 cases and unchanged in 4 cases. The sputum converted in 70 per cent of cases. After partial pneumonolysis the cavity disappeared in 53 per cent of cases. The sputum converted only in 9 out of 20 cases. Fluid collections in the costophrenic angle following operation were observed in 33 cases (29 per cent), effusions reaching the eighth ribs in 5 cases and massive effusion with fever in 2 cases. The authors conclude that there is no reason for reserve in the application of pneumonolysis in children, this operation being well tolerated and not giving a higher incidence of complications than in adults.—*The Operation of Jacobaeus in Children and Adolescents, A. O. Majanz & F. I. Braginskaja, Probl. tuberk., 1944, 4: 25.—(V. K. Leites)*

Extrapleural Pneumothorax.—The authors give further information on a previous report of the results of extrapleural pneumothorax in the treatment of pulmonary tuberculosis. They detail the late results in 32 cases operated between 1938 and 1940. The immediate results were successful in 46 per cent of the cases (first report). The late good results dropped to 31 per cent (second report). Empyema was observed in 10 cases, 4 of which died. Complementary thoracoplasty used in those cases where extrapleural pneumothorax was ineffective, presented great technical difficulties and proved to be ineffective in many cases. In view of this result the authors have become more skeptical. They recommend, therefore, to give up this method and replace it by a thoracoplasty following a rest cure which may allow stabilization of lesions.—*Neumotorax extrapleural (Resultados alejados), Medicos del Hospital-Sanatorio "El Peral," Bol. d. Hosp. San. "El Peral," April, 1944, 4: 37.—(H. Behm)*

Extrapleural Pneumothorax.—This paper deals with the problem of the maintenance of extrapleural pneumothorax with highly positive pressures with the view of preventing obliteration of the extrapleural space. The study is based on 30 cases operated upon in the surgical service of the Moscow Institut for Tuberculosis from 1938 to 1943. At first the authors employed highly positive pressures in the very early postoperative period. The pressures exceeded those indicated on the manometer of the usual pneumothorax apparatus (40 cm. water) and were consequently administered with exclusion of the manometer. This procedure was later recognized to be erroneous. The high pressures produced a disruption of the still unconsolidated wound and a leakage of the extrapleural space with occurrence of massive emphysema and perforation of the extrapleural fluid through the opening. In all these cases there was a rapid loss of the extrapleural space. In subsequent cases the extrapleural pneumothorax was carried on under a more cautious regimen with slower increase in pressures during the first postoperative month and the use of high pressures under exclusion of the manometer only from the second postoperative month on or

later. The authors claim that this policy was successful in the majority of the remaining cases and that, with the exception of cases complicated by empyema, they had no instances where the progressive diminution of the extrapleural space could not be counteracted by high pressures. It is furthermore emphasized that the use of such pressures from the second month on have not led to serious complications. A common complaint after the refill was the sensation of a slight and transient oppression in the chest. Only a few cases showed pain in the arm, precordial pain, sudden headache and short fainting spells. These phenomena are attributed to high pressure on the vessels and nerves of the exposed mediastinum. It was observed that an elevation of the axillary temperature on the homolateral side was a very frequent occurrence. In 1943 the authors inserted a mercury-manometer into their pneumothorax apparatus. Readings taken in extrapleural pneumothoraces conducted in the above described way revealed the commonly employed pressures to be between +60 and +80 mm. mercury. In some cases with a small extrapleural space and not exposed mediastinum the final readings were +150 mm. mercury and higher. The sensations of the patient during and after the refill, the X-ray follow-up of the obtained collapse, and sputum examinations were the main criteria in establishing the regimen of extrapleural pneumothorax. It is stated that extrapleural pneumothorax conducted with high pressures does not considerably diminish respiratory function. In conclusion, the question is brought up whether such high pressures do not lead to inexpandable lung. The authors count with this possibility but do not believe that the other alternative of conserving the extrapleural space, namely extrapleural oleothorax, guarantees in a larger measure the reëxpansion of the lung. The opinion is expressed that fundamentally the application on a large scale of extrapleural pneumothorax has already converted this intervention to a permanent collapse procedure. A life-time continuation of this form of collapse is advocated and it is believed that in this way the indications for thoracoplasty might be reduced.—*The Regimen of Extrapleural Pneumothorax, D. S. Kvachnin, Probl. tuberk., 1944, 3: 38.*—(*V. K. Leites*)

Extrapleural Pneumonolysis.—Difficultiesin the management of extrapleural pneumonolysis do not consist in the operative technique but in the great number of possible postoperative complications. It was observed that those cases in which the tuberculosis had not become stabilized the procedure was followed by a more profuse exudation. The inflamed and richly vascularized pleura reacts with hemorrhages, whereas cases in which there are productive processes with a thickened pleura remain dry. The greatest danger consists in the subsequent contamination of the extrapleural exudate. To minimize all these complications, the patients have to be well chosen; cases with exudative not yet stabilized processes have to be eliminated. Calcium and vitamin C are given preoperatively. Careful hemostasis must be done and the operation should be as short as possible. Cortical cavities should not be touched. Aspiration of the exudate should be avoided during the first eight postoperative days, if possible. Absolutely sterile technique is essential. The results obtained with lavage depend primarily on the nature and virulence of the infecting organism and upon the resistance of the body and only secondarily on the antiseptic properties of the solution used. Prolonged lavage often influences the general condition of the patient unfavorably and decreases the patient's resistance. Better results are obtained with the drainage as advocated by Monaldi. The exudate is being drained daily and substituted with air. Finally the extrapleural space is filled with paraffin and the fistula closes. In the presence of a bronchopleural fistula and secondary infection of the extrapleural space a secondary thoracoplasty is essential. It is important to maintain the extrapleural pneumothorax long enough to obtain arrest of the underlying pulmonary condition and yet to abandon it

before the walls of such a pneumothorax become rigid. Such spaces always fill with exudate and, should a thoracoplasty become necessary later on, the result will not be as good as would have been obtained over an extrapleural pneumothorax with elastic walls. —*Komplikationen und Nachbehandlung der Pneumolyse, A. Emmler, Deutsches Tuberk.-Bl., 1942, 16: 146.*—(*G. Simmons*)

Thoracoplasty.—The cases referred to in this paper correspond to 122 patients who were treated for pulmonary tuberculosis by thoracoplasty, 67 of whom were males and 55 females, the age ranging from 16 to 52, averaging 27. Up to the moment of the operation, the average age of the lesion was 30.4 months. Twenty-three months of duration before sanatorium treatment correspond to 6.5 months of active work done after diagnosis or between periods of treatment; 11.5 months of rest at home and 5 months of hospitalization not in the sanatorium. It was noted that males work for a longer period (10 months as an average) than females and that they stay hospitalized for shorter periods (4 months). Up to the moment of the operation each patient represents a cost of US $800, without taking into account the cost of previous ambulatory treatment and the industrial working hours lost in this period. The cost of each surgical recovery estimated in the same way amounts to US $400. The lesions presented by these patients were 101 cavitary lesions (63 cases with cavities up to 2 cm. in diameter, 19 cases with cavities 2 to 5 cm. in diameter and 19 cases with cavities above 5 cm.); 13 predominant infiltrative lesions and 8 tuberculous empyemata. The successful results, (including cured, apparently cured, arrested, apparently arrested and quiescent lesions) as investigated more strictly than those stated in the National Tuberculosis Association standards (8 cultures of gastric lavage being the average employed in this investigation), were as follows: 69 per cent in cavitary lesions, 92 per cent in predominant infiltrative lesions and 50 per cent in empyemata. In the cavitary cases, the lower the cavity the less successful were the results. The same applies for anterior and internal cavities. Also, the larger the cavities, regardless of their location, the less effective is the operation. Generally speaking, the results of the treatment varies according to extension and age of the lesions. Out of the lesions occupying one-third of the lung, 32 per cent were at least 24 months old; 75 per cent of the complicated and bilateral lesions were also included in the group of a greater age. Seventy per cent of the cases under 19 months of duration showed favorable results as compared with 60 per cent in cases of older lesions. Eighty of the 122 patients were operated at the Surgical Department of the Hospital-Sanatorio "El Peral" and 42 at the Surgical Unit of the Hospital "San Jose." of those operated at the Hospital-Sanatorio "El Peral," 72 per cent showed favorable results; of the entire group of 122 patients, 64.7 per cent showed favorable results. Mortality, either immediate or later, was 13.7 per cent for our patients and 17 per cent for the whole group. The period between the end of the surgical treatment and the last clinical control is 9.5 months on the average. The lapse of time between the last clinical control and the date of this study averaged 3.6 months.—*Toracoplastia en el tratamiento de la tuberculosis pulmonar, Medicos del Hospital-Sanatorio "El Peral," Bol. d. Hosp.-San. "El Peral," October, 1944, 4: 102.*—(*H. Behm*)

Collapse Therapy for Apical Cavities.—The results obtained by different types of collapse therapy in the treatment of 73 apical cavitary pulmonary tuberculosis have been studied. The purpose of this study was to verify the statement made by Coryllos that thoracoplasty is to be preferred in the treatment of this kind of lesions. The conclusions are: (*1*) Apical cavitary tuberculosis should not be treated by pneumothorax, which is often an ineffective treatment, implying a high proportion of complications. (*2*) In the 73 cases reported, pneumothorax was effective only in 5.7 per cent of the patinets on whom it

was attempted and only in 13 per cent of the cases where the pleural space was found free. In the unselected cases of pulmonary tuberculosis the corresponding percentages are 49 per cent and 68 per cent. (*3*) The frequency of a serious inflammatory pleural effusion which impedes continuing the pneumothorax was 26 per cent which is very high when compared with similar complications in nonselected cases of pneumothorax, which amount to 4.7 per cent. (*4*) The failure of pneumothorax in these cases is due to the fact that the cavity is located in the pulmonary region of shortest diameter, which results in a rapid pleural involvement. This fact is demonstrated by (*1*) The high percentage of failures in the first attempt to create a pneumothorax (25 per cent); (2) the observation that every pneumothorax brought about had pleural adhesions, and (3) the low proportion of complete division of adhesions (26 per cent) in the cases where pneumonolysis was attempted. This operation became complicated in 8.7 per cent of the cases with empyema. (*5*) It is emphasized that apical cavitary tuberculosis are primary indications of thoracoplasty, which is the type of collapse that gives best results in these cases. In the 14 cases operated on, 10 were successful (roentgenological cavity closure, persistent sputum conversion in cultures). The operation should be postponed only when a preoperative stabilization of lesions is indicated. (*6*) There are but two exceptions to this rule: (1) bilateral apical cavitary tuberculosis and (2) unilateral apical cavitary tuberculosis which are progressive when on rest-cure and which extended down to the infraclavicular region. In both cases, attempts to create a pneumothorax are accepted, for lack of any better method, provided that (1) mechanical effectiveness is obtained within a period of six to eight weeks, and (2) bacteriological and roentgenological effectiveness be obtained within two months following pneumonolysis. (*7*) For the application of the foregoing conclusions by apical cavity is understood a cavity the major portion of which is projected in the roentgenogram in the region limited by the mediastinum inwards, the internal border of the first rib upwards and outwards and by a horizontal line passing along the inner border of the first rib at the level of the chondrocostal junction, downwards.—*Colapsotepia de las cavernas apicales, Medicos del Hospital-Sanatorio "El Peral," Bol. d. Hosp.-San. "El Peral," April, 1944, 4: 5.*—(*H. Behm*)

Revision Thoracoplasty for Residual Cavities.—Thoracoplasties performed by the author are usually done in three stages. The upper three ribs are taken out completely with their cartilages and with the corresponding transverse processes, and of the lower ribs as much is removed as is necessary to obtain a good collapse and the sinking-in of the scapula. An apicolysis, as complete as possible, is added. The results thus obtained are usually good, but sometimes residual cavities persist because of insufficient rib resection, too prolonged intervals between stages or too advanced fibrous induration of the lung. In this case a revision operation is done, which consists of an additional plastic operation and a muscle plombage. The procedure is carried out in two stages. During the first stage, through a posterior incision, residual pieces of ribs and transverse processes are removed and the lung is separated from the costovertebral gutter as much as possible. After one to two weeks the second stage is performed. This time the incision is made parallel to the clavicle and then extended downward along the sternal border. The skin is separated and the clavicular and sternal portion of the pectoral muscle is separated by blunt dissection, as far back as to the humerus, where the insertion of the sternocostal portion is cut. The sternal insertion of the pectoral remains in situ in order to maintain the mammary artery intact. Thus, after dissection of the pectoral, remains of ribs and cartilages can be resected. Then a parasternal incision through the costal perichondrium and the intercostal muscles is made until the pleura is met, where the lung is separated bluntly from the thoracic wall and from the mediastinum as far as possible.

Following hemostasis the dissected portion of the pectoral muscle is placed into the extrapleural space thus created and sutured in the region of the transverse processes. The muscle is supposed not only to fill the space thus created but also to form a firm wall, extending from the sternum to the costovertebral gutter. Five patients were operated on according to this technique and the operation was well tolerated. Cure was obtained in 3, one had a contralateral spread and one developed intestinal tuberculosis. In both these cases a small residual cavity had persisted.—*Über die Korrektionsplastik bei Restkavernen, O. Hultén, Acta chir. Scandinav., 1942, 86: 315.—(G. Simmons)*

Thoracoplasty.—A new technique of thoracoplasty is described. An incision is made near the posterior border of the sternocleidomastoid muscle towards the acromico-clavicular articulation. The first rib is visualized, the periosteum incised in H form and stripped for 1.5 cm. Then a special raspatory with a long, graduated elastic handle is introduced and the rib freed from the periosteum subperiosteally. A specially constructed saw which also cuts subperiosterally is then inserted and the whole of the rib resected. The second rib is approached through the same incision and also resected entirely. It may be necessary to do a counter-incision just below the clavicle if it is not possible to reach the end of the rib and the transverse process by the first incision. The third, fourth and fifth ribs are approached by an incision one and one half inches long and in line with the middle of the fourth rib. Here, also, an H incision is made in the periosteum and the same technique used as previously described. The other ribs are approached in a similar way. This operation has distinct advantages: Injury to the tissues is minimal. The absence of an extensive incision reduces the dead space in which abscess formation is possible. The danger of postoperative infections is minimal. There is very little loss of blood. The action of all muscles is maintained. The technique is easy. The operation can be done in a very short time and there are no residual deformations.—*Toracoplastia anatomica (communicacion previa), M. C. Bortagaray, Rev. Asoc. méd. argent., May 15, 1944, 58: 300.—(W. Swienty)*

Surgical Treatment of Cavities.—In the attempts to improve the technique of thoracoplasty two features of the tuberculous cavity were not sufficiently considered: (*1*) the cavity wall, (*2*) the draining bronchus. In rigid cavities thoracoplasty in itself is not sufficient to cause a decrease in size of the cavity, but a considerable difference between the pressure inside the cavity and the pressure from the outside is necessary to obtain a shrinkage. This difference in pressure can be obtained either by decreasing the inner pressure by means of an intracavitary aspiration or by increasing the outer pressure. Kinking of a bronchus with consequent formation of a bronchial valve-mechanism leading to the ballooning of the cavity is a frequent occurrence after a thoracoplasty. In this case too, intracavitary aspiration can produce good results. Best results, however, are obtained when intracavitary aspiration is employed prior to performance of the thoracoplasty instead of later when the results obtained surgically appear to be unsatisfactory. This thesis is proved on the basis of 3 reported cases, in which big cavities were present and the general condition of the patients were so bad that a surgical procedure could not be considered. After institution of the cavitary drainage the general condition improved, the cavities shrank and a subsequent thoracoplasty gave good results. The presence of the catheter complicates the operative procedure, but the author believes that nevertheless intracavitary aspiration with following thoracoplasty should be the procedure of choice in big, rigid-walled cavities.—*Neue Gesichstpunkte bei der chirurgischen Behandlung der tuberkulosen Kaverne, A. Brunner, Deutsche Ztschr. f. Chir., 1942, 255: 417.—(G. Simmons)*

Intracavitary Aspiration.—Experiences with 17 cases of cavity aspiration are summarized. In 15 cases the cavities corresponded to Pinner's type II, the other 2 were classified as type III; in the latter the indication for aspiration treatment was considered poor. In general, Monaldi treatment is most indicated in thin-walled balloon cavities located in the upper lobe and accessible to anterior approach; there should be no lobar atelectasis, no other cavities, and the disease should be relatively recent. Every available method should be utilized for the accurate localization of the cavity. Within a few days after institution of drainage the cavity shows marked decrease in size. There is an increase in the density surrounding the cavity; after several months the density gradually absorbs. Opposite the cavity the pleura becomes thickened and remains so. The distance between the cavity and the chest wall increases, apparently confirming Monaldi assumption of atelectasis around the cavity. As the cavity becomes smaller and flatter, tomography is needed to visualize it. The state of the tract between the cavity and the chest wall is also best determined by tomography. In 10 out of the 17 cases reviewed the cavity persisted after Monaldi's aspiration.—*Roentgenographic Aspects of Monaldi's Cavity Aspiration in Pulmonary Tuberculosis, W. R. Oechsli & E. Kupka, Am. J. Roentgenol., December, 1943, 50: 733.*—(*P. Lowy*)

Intracavitary Aspiration.—The old conception of the delimitation of caseous foci by a capsule composed of newly formed connective tissue cannot be accepted any longer. The author believes that such a delimitation occurs rather on the basis of physico-chemical phenomena, such as acidification, dehydration, flocculation of colloidal substances and precipitation of minerals, decomposition of fatty acids etc. Such complex chemical changes in turn determine fixation of bacilli, make it impossible for the associated bacterial flora to develop; they lead to an alteration of the normal humoral exchanges and the absorption of such complex materials becomes impossible. A cavity thus delimited becomes, biologically, a separate entity. These cavities are called "cavities, biologically limited." Then there are the "fusion cavities," in which the loss of substance is due to coalescence of caseous foci. The pathological material remains semifluid and the humoral exchange remains active. Between these two extremes there are (*1*) cavities in the process of delimitation and (*2*) cavities that can be limited, but are not limited yet for different reasons (insufficient drainage of pathological material, persistence of a perifocal exudation etc.). Intracavitary aspiration is not feasible and may be dangerous in "fusion cavities." Monaldi's procedure can be applied successfully only in cavities in which the loss of substance was not great and it is necessary to study in retrospect the history of the cavity, to determine whether it originated from the fusion of several caseous foci (great loss of substance) or from a centrifugal extension of one focus (relatively small loss).—*Il campo di applicazione dell'aspirazione endocavitaria (Direttive generali), V. Monaldi, Boll. e Atti d. Acc. di Roma, 1943, vol. 49.*—(*G. Simmons*)

Intracavitary Aspiration.—Over a period of two and one half years 40 patients with pulmonary tuberculosis were treated with the intracavitary aspiration as advocated by Monaldi. The best indication is an isolated stabile cavity of the upper lobe without considerable peripheral infiltration. It is dangerous to aspirate cavities located near the hilum. In the majority of cases the success, characterized by decrease of cough and sputum, manifests itself immediately after institution of Monaldi's procedure, and the general condition of the patient improves. By means of lipiodol the progressive obliteration of the draining bronchus could be demonstrated. Out of 40 cases the drainage was unsuccessful in 15 because the disease was already too far advanced; 2 patients died of postoperative hemorrhage. In 7 cases only partial results were obtained; 5 cases or 12.5 per cent were completely cured. In these cases aspiration was carried on for a variable

period of eight to twenty months. All these "cured" cases had apical cavities. In all cases the catheter was eliminated spontaneously. In 11 cases aspiration and thoracoplasty were combined, drainage being performed before thoracoplasty in the majority of cases. In 2 cases intracavitary aspiration of a cavity persistent after a thoracoplasty was done and in one of these cases the result was good.—*Deux ans d' expérience du drainage endocavitaire, F. Dumarest, P. Brette & J. Germain, Presse méd., 1942, 37: 373.*—(*G. Simmons*)

Reconditioning after Chest Surgery.—A reconditioning program consists of physical reconditioning, educational reconditioning, occupational therapy and recreation. The specific problems of a reconditioning program for patients convalescing from a surgical disease of the chest are a lowered vital capacity, a decrease in stamina and strength, postural defects and the loss of power of large muscle groups. The rehabilitation of the tuberculous patient takes place following discharge from the Army. The reconditioning program for patients with suppurative thoracic disease lasts from ten days to two weeks. The patient returns to the hospital for dressings but otherwise he is removed from the hospital atmosphere and is engaged in graded exercises such as breathing exercises, calisthenics, outdoor drills and marches. Vigorous physical activities has been found of benefit in hastening the obliteration of empyema and lung abscess cavities. Of 22 patients with chronic nontuberculous empyema 18 were returned to duty. If pulmonary resection is necessary the patient will usually be able to return to duty if no more tissue is resected than the amount contained in the middle and lower lobes of the right lung. The period of immediate convalescent care is followed by a period of physical therapy which extends from the seventh to the twenty-first postoperative day. The therapy consists of breathing exercises and shoulder exercises given twice daily. They may be supplemented by local application of radiant heat or general application of ultraviolet irradiation. After the third week the patient is transferred to the Reconditioning Service where he undergoes the same routine as the patient recovering from a suppurative pulmonary disease. Swimming was found of particular value for patients recovering from pulmonary resection. The average length of hospitalization was about ten weeks. Of 31 patients treated by resection, 25 were returned to duty, 3 were discharged because of suppurative sinus disease and suppurative bronchitis, 3 were discharged for reasons not related to the pulmonary condition. Patients who required exploratory thoracotomy followed the same routine with good result.—*Reconditioning in Chest Surgery, J. B. Grow, O. M. Raines & O. L. Huddleston, J. A. M. A., December 23, 1944, 126: 1059.*—(*H. Abeles*)

Costa Reaction.—The diagnostic and prognostic value of the reaction was investigated. The test, as standardized by the author, is performed as follows: 0.2 cc. of blood is added to 1.5 cc. of 2 per cent procaine in 0.85 per cent saline, the mixture centrifuged for five to eight minutes, and then one drop of formalin added. A positive reaction is indicated by the appearance of a distinct cloud within three to ten minutes. The results were graded according to the time of the appearance of the cloud. The test was negative in 25 normal individuals, positive in 88 per cent of the 140 cases of pulmonary tuberculosis tested. The reaction is of no value in the diagnosis and differential diagnosis of pulmonary tuberculosis, since it is frequently negative in definitely diagnosed early cases and, on the other hand, it is often positive in other intrathoracic conditions, including heart diseases. It can, however, be used to determine the progress of pulmonary tuberculosis; progressively stronger reactions indicate increasing activity of the disease, while improvement is usually associated with weakening reactions. The nature of the reaction is not known.—*The Costa Reaction: A Simple Test for Assessing the Progress of Pulmonary Tuberculosis, S. Cohen, South African J. M. Sc., May, 1944, 9: 59.*—(*P. Lowy*)

Pulmonary Lavage.—Bacteriologic examination of sputum and gastric contents in the usual manner is not always satisfactory in the diagnosis of active pulmonary tuberculosis. Many patients do not expectorate, although they have suspicious X-ray findings. On the other hand, tubercle bacilli will not be found in a smear unless their concentration is 100,000 or more in 1 cc. Abreu (San Sebastian Hospital, Rio de Janeiro) describes a technique of pulmonary washing for the recovery of microorganisms. A needle is inserted between the cricoid and thyroid cartilages; 8 cc. of novotutocaine (0.5 per cent) is then injected. After an interval of ten minutes 40 cc. of isotonic saline solution is slowly instilled, the table tilted and the patient kept in Trendelenburg position for five minutes. Then the patient is turned into the knee-chest position for another five minutes, after which he is allowed to cough the contents into a hemorrhage box. Sixty to 80 cc. of material, largely bronchoalveolar secretions, will be returned. The only contraindication is recent hemoptysis. This method is without danger and is preferred by the patients to gastric lavage. It is simple, requires few instruments, and it is possible to recover tubercle bacilli and other organisms by this method which could not be obtained by any other.—*Lavado pulmonar en el diagnostico etio-patogenico o evolutivo de la tuberculosis, M. de Abreu, Prensa méd. argent., October 11, 1944, 31: 2025.*—(*W. Swienty*)